

# CLAIMS

We claim:

- 1 1. A method of reducing contouring in a liquid crystal on silicon (LCOS) display,  
2 said method comprising:  
3 receiving a frame-doubled input signal comprising a positive picture and a  
4 negative picture; and  
5 applying a first dither to said input signal, said first dither selectively modifying  
6 a primary-color gamma value of one of said pictures resulting in reduced contouring  
7 in said input signal.
- 1 2. The method of claim 1, wherein said first dither is specified by a gamma  
2 table.
- 1 3. The method of claim 1, wherein said one of said pictures is said negative  
2 picture.
- 1 4. The method of claim 1, wherein said one of said pictures is said positive  
2 picture.
- 1 5. The method of claim 1, wherein said input signal is an 8-bit signal and said  
2 output signal is a 10-bit signal.
- 1 6. The method of claim 1, wherein said primary-color is selected from the group  
2 consisting of red, green, and blue.
- 1 7. The method of claim 1, further comprising:

2 applying a second dither to said input signal, wherein said first and second  
3 dither result in an output signal having reduced brightness level repetition for  
4 consecutive input levels.

1 8. The method of claim 7, wherein said first dither is specified by a gamma table  
2 and said second dither is applied at an input of said gamma table.

1 9. The method of claim 7, wherein said second dither is performed by applying a  
2 one-least-significant-bit dither signal to said input signal.

1 10. The method of claim 9, wherein said second dither produces a quincunx  
2 pattern.

1 11. The method of claim 10, wherein said quincunx pattern is alternately inverted  
2 and not inverted.

1 12. The method of claim 7, wherein said second dither is selected from the group  
2 consisting of a 2-state dither, a 4-state dither, and an 8-state dither.

1 13. A method of reducing contouring in a liquid crystal on silicon (LCOS) display,  
2 said method comprising:

3 receiving a frame-doubled input signal comprising a positive picture and a  
4 negative picture; and

5 applying a first dither to said input signal wherein said first dither is performed  
6 by applying a one-least-significant-bit dither signal to said input signal.

1 14. A method of reducing contouring in a liquid crystal on silicon (LCOS) display,  
2 said method comprising:

3 (a) receiving a frame-doubled input signal comprising a positive picture  
4 and a negative picture;

5 (b) applying a first dither to said input signal, said first dither specified by a  
6 gamma table and selectively modifying a primary-color gamma value of one of said  
7 pictures; and

8 (c) applying a second dither to said input signal at an input of said gamma  
9 table, wherein said first and second dither result in an output signal having reduced  
10 brightness level repetition for consecutive input levels.

1 15. A multiple-dither system for reducing contouring in a display comprising:  
2 a memory having a gamma table stored therein, said gamma table specifying  
3 a first dither to apply to a received, frame-doubled input signal comprising a positive  
4 and a negative picture, wherein said first dither selectively modifies at least one  
5 primary-color gamma value of one of said pictures;  
6 a processor communicatively linked to said memory, said processor  
7 generating said gamma table and loading said gamma table in said memory;  
8 a dither unit communicatively linked to said processor, said dither unit  
9 applying a second dither comprising a one-least-significant-bit dither signal to the  
10 input signal at an input to said gamma table; and  
11 a liquid crystal on silicon display for producing an image based upon said  
12 multiple-dithered input signal.

1 16. The system of claim 15, further comprising:  
2 an analog-to-digital converter, said analog to digital converter digitizing said  
3 input signal and providing said digitized input signal to said processor.

1 17. The system of claim 15, wherein said one of said pictures is said negative  
2 picture and said gamma table has a positive portion and a dithered negative portion.

1 18. The system of claim 15, wherein said one of said pictures is said positive  
2 picture and said gamma table has a dithered positive portion and a negative portion.